

REMARKS

Claims 1-12 and 18-23 are pending in the present application. As a result of a previous restriction requirement, claims 13-17 were cancelled. Claims 1-12 and 18-19 are presently rejected. Claims 20-23 are allowed. Reconsideration of all rejected claims is respectfully requested in light of the arguments presented below.

Claim Rejections under 35 USC 102

Claims 1-12 and 18-19 are rejected under 35 USC 102(b) as being anticipated by Kim, USP 5,923,976. However, not all elements of these claims appear to be shown by Kim. Claim 1 recites, “forming an array of first floating gate portions across the substrate surface with a gate dielectric therebetween, subsequently forming a masking layer over areas of the substrate not covered by first floating gate portions,” (emphasis added). Kim does not appear to show this order of steps. Kim appears to show forming mask 24 first in Figure 5C and later forming portion 23a by patterning first conductive layer 23 (see Figure 5H and column 6, lines 31-35).

Claim 1 also recites, “a pattern of openings in the masking layer is self-aligned to the first floating gate portions.” This limitation does not appear to be shown by Kim. Kim appears to show use of two separate masks. “A first mask having an open region 24a is formed on the first conductive layer 23. The open region 24a is made to form the upper portion, that is, the protruding portion, of the floating gate 16 of FIG. 4B.” Column 6, lines 12-15. Later, a first conductive layer pattern 23a is formed using a second mask as shown in Figure 5H. “Then, a second mask 28 wider than the open region 24a of first mask 24 is formed on a predetermined portion of third conductive layer 27.” Column 6, lines 28-30. Because two different mask steps are used, it is not clear how opening 24a is considered self-aligned to first conductive layer 23 or a portion of first conductive layer 23.

Claim 1 also recites, “forming sidewall elements in the openings in the masking layer” and “forming second floating gate portions defined by the sidewall elements in at least one direction” These features do not appear to be shown by Kim. It is not clear what element of Kim could correspond to the sidewall elements of claim 1. The Office Action cited feature 24 as a “sidewall.” However, open region 24a in mask 24 is cited as openings in the masking layer of claim 1. Thus, it is not clear how mask 24 could also be considered a sidewall element.

Clarification of this point is requested. Because the elements of claim 1 discussed above have not been disclosed by Kim, claim 1 is submitted to be allowable.

Claims 2-12 depend from claim 1 and are submitted to be allowable at least for depending from an allowable base claim. In addition, claims 2-12 include additional claim elements further distinguishing over Kim.

Claim 5 recites, "the dielectric material is removed after the masking layer material that overlies first floating gate portions covered by dielectric material is removed." Insulating layer 26 was cited as dielectric material. However, insulating layer 26 appears to remain in place as shown in Figure 5H and does not appear to be removed.

Claim 6 is amended to have language consistent with claim 1. Claim 6 as amended recites, "sidewall elements are formed by deposition and etch back of silicon nitride." No such sidewall elements formed by deposition and etch back of Silicon Nitride appear to be disclosed by Kim.

Claim 11 recites, "the conductive gates extend to enclose the second floating gate portions from above and on four lateral sides." This does not appear to be disclosed by Kim. Figure 5H shows a cross section in two dimensions, but does not appear to indicate that conductive layer pattern 27a encloses conductive layer pattern 25a on four lateral sides.

Claims 18 recites, "forming an array of first floating gate portions, wherein each first floating gate portion is physically separated from adjacent first floating gate portions, thereafter forming second floating gate portions," (emphasis added). Kim does not appear to show steps having this order. Kim appears to show forming mask 24 first in Figure 5C and later forming portion 23a by patterning first conductive layer 23 (see Figure 5H and column 6, lines 31-35).

Claim 18 also recites, "the second floating gate portion being self-aligned to the first floating gate portion." Such self-aligned first and second floating gate portions do not appear to be disclosed by Kim as discussed above with respect to claim 1. Therefore, claim 18 is submitted to be allowable over Kim.

Claims 19 is submitted to be allowable at least for depending from an allowable independent claim.

CONCLUSION

In view of the amendments and remarks contained herein, it is believed that all claims are in condition for allowance and an indication of their allowance is requested. However, if the Examiner is aware of any additional matters that should be discussed, a call to the undersigned attorney at: (415) 318-1160 would be appreciated.

Respectfully submitted,



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